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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,248	01/20/2004	Seiichi Higaki	500.37509CX3	7079

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EXAMINER	
TRAN, DENISE	

ART UNIT	PAPER NUMBER
2186	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/759,248	HIGAKI ET AL.	
	Examiner	Art Unit	
	Denise Tran	2186	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/382,774.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/4/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-24 are presented for examination.

2. The disclosure is objected to because of the following informalities: the status of the application 10/457,387 should be updated.

Appropriate correction is required.

3. Claims 2-6, 8-12, 14-18, and 20-24 are objected to because of the following informalities: "A disk array," line 1 should be –The disk array--. Appropriate correction is required.

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claim(s)_1_ of patent 6,757,782_ contain(s) every element of claim(s)_1,7,13, and 19 of the instant application and as such anticipate(s) claim(s)_1,7,13, and 19 of the instant application.

"A later patent claim is not patentably distinct from an earlier patent claim if the later

claim is obvious over, or **anticipated by**, the earlier claim. In re Longi, 759 F.2d at 896, 225 USPQ at 651 (affirming a holding of obviousness-type double patenting because the claims at issue were obvious over claims in four prior art patents); In re Berg, 140 F.3d at 1437, 46 USPQ2d at 1233 (Fed. Cir. 1998) (affirming a holding of obviousness-type double patenting where a patent application claim to a genus is anticipated by a patent claim to a species within that genus). " ELI LILLY AND COMPANY v BARR LABORATORIES, INC., United States Court of Appeals for the Federal Circuit, ON PETITION FOR REHEARING EN BANC (DECIDED: May 30, 2001).

6. Claims 1-24 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 6,615,314. Although the conflicting claims are not identical, they are not patentably distinct from each other because the differences between the claims are the limitations pertaining to the ECC group for correcting errors. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the ECC group for correcting errors because it would increase reliability of the system and reconstruct data.

7. Claims 1-24 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-24 of copending Application No. 10/759,248. Although the conflicting claims are not identical, they are not patentably distinct from each other because the differences between the claims are the limitations pertaining to the ECC group for correcting errors. It would have been obvious to one of ordinary skill in the art at the time the invention was made

to add the ECC group for correcting errors because it would increase reliability of the system and reconstruct data.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 13-14, 17-20, and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson, U.S. Patent No. 5,617,425 (hereinafter Anderson) in view of Johnson, U.S. Patent No. 6,442,179 (hereinafter Johnson).

As per claims 13 and 19, Anderson teaches a disk array (e.g., fig 2., els. 24-26 and els. 32) comprising:

a plurality of disk units (e.g., fig. 2, els. 32; fig. 5, els. 84-88);

a spare disk unit serving as a spare for said disk units (e.g., col. 8, lines 45-51 and col. 12, lines 7-14);

a first control unit (e.g., fig. 2, el. 24), to be connected to a host unit (e.g., el. 22), for controlling input and output between said host unit and said disk array (e.g., col. 7, lines 12-25);

a second control unit (e.g., fig.2, el. 26), connected to said spare disk and said disk units (e.g., fig. 5, els. 84-92), for controlling input and output between said first control unit and said disk units (e.g., col. 7, lines 12-25 and col. 12, lines 1-14); and

communication channels connecting said disks units, said spare disk and said second control unit (e.g., fig. 2, els. 31 and 33; fig. 5, els. loop 94, 96),

wherein data transfer in each communication channel is controlled by said second control unit (e.g., col. 12, lines 45-46) and data transfer speed of said communication channel is higher than that of each of said units (i.e., a plurality of jobs are performed at a time; e.g., fig. 2, els. 31 and 33; fig. 5, els. 94 and 96; and col. 12, lines 45-52) and an error correcting code (ECC) group (e.g., fig.5, el. 88)

Anderson does not explicitly show the use of multiplexing and an error correcting code (ECC) group is set across a plurality of the multiplex communication channels for error correcting operation on data in the disk units connected to said plurality of the multiples communication channels.

Johnson shows the use of multiplexing (e.g., fig. 3, els. 226-227, 260; col. 4, lines 1-10) and an error correcting code (ECC) group is set across a plurality of the multiplex communication channels for error correcting operation on data in the disk units connected to said plurality of the multiples communication channels (e.g., fig. 3, els. 226-227, 260; col. 4, lines 1-10; col. 7, lines 40-55; col. 7 line 64 to col. 8, line 5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Johnson into the system of Anderson because it would increase a data transfer rate and reliability of a disk array .

As per claims 14 and 20, Anderson shows wherein said control unit transmits or receives a command to or from a certain one of said disk units and said spare disk and writes data of said certain disk unit into said spare disk (e.g., col. 12, lines 45-52 and col. 13, lines 1-11).

As per claims 17 and 23, Anderson teaches communication channels connecting said disks units and said second control unit (e.g., fig. 2, els. 31 and 33; fig. 5, els. loop 94, 96). Anderson does not explicitly show the use of a parity group is constructed by said disk units connected to other communication channels. Johnson shows a parity group is constructed by said disk units connected to other communication channels (e.g., fig. 3, els. 226-227, 260; col. 4, lines 1-10; col. 7, lines 40-55; col. 7 line 64 to col. 8, line 5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Johnson into the system of Anderson because it would increase a data transfer rate and reliability of a disk array .

As per claims 18 and 24, Anderson shows wherein said communication channel is a loop made of a fiber channel (e.g., fig. 2, els. 31, 33; fig. 3, FC loop; col. 7, lines 32-35). As stated above in the rejections to claims 1 and 7, Anderson does not explicitly show the use of time division multiplex. Johnson shows time division multiplex (e.g., col. 10, lines 20-25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Johnson into the system of Anderson because it would allow communication with a greater number of disk units.

10 Claims 1-2, 5-8, and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson, U.S. Patent No. 5,617,425 (hereinafter Anderson) in view of Johnson et al., U.S. Patent No. 6,442,179 (hereinafter Johnson), and further in view of Matoba, U.S. Patent No. 5,611,069 (hereinafter Matoba).

As per claim 1, Anderson teaches a disk array (e.g., fig 2., els. 24-26 and els. 32) comprising:

a plurality of disk units (e.g., fig. 2, els. 32 or fig. 5, els. 84-88);

a spare disk unit serving as a spare for said disk units (e.g., col. 8, lines 45-51 and col. 12, lines 7-14);

a first control unit (e.g., fig. 2, el. 24), to be connected to a host unit (e.g., el. 22), for controlling input and output between said host unit and said disk array (e.g., col. 7, lines 12-25);

a second control unit (e.g., fig.2, el. 26), connected to said spare disk and said disk units (e.g., fig. 5, els. 84-92), for controlling input and output between said first control unit and said disk units (e.g., col. 7, lines 12-25 and col. 12, lines 1-14); and

communication channels connecting said disks units, said spare disk and said second control unit (e.g., fig. 2, els. 31 and 33; fig. 5, els. loop 94, 96),

wherein data transfer in each communication channel is controlled by said second control unit (e.g., col. 12, lines 45-46) and data transfer speed of said communication channel is higher than that of each of said units (i.e., a plurality of jobs are performed at a time; e.g., fig. 2, els. 31 and 33; fig. 5, els. 94 and 96; and col. 12, lines 45-52) and an error correcting code (ECC) group (e.g., fig.5, el. 88)

Anderson does not explicitly show the use of multiplexing and an error correcting code (ECC) group is set across a plurality of the multiplex communication channels for error correcting operation on data in the disk units connected to said plurality of the multiples communication channels; and a common memory which stores disk management data indicating a status of each of said disk units.

Johnson shows the use of multiplexing (e.g., fig. 3, els. 226-227, 260; col. 4, lines 1-10) and an error correcting code (ECC) group is set across a plurality of the multiplex communication channels for error correcting operation on data in the disk units connected to said plurality of the multiples communication channels (e.g., fig. 3, els. 226-227, 260; col. 4, lines 1-10; col. 7, lines 40-55; col. 7 line 64 to col. 8, line 5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Johnson into the system of Anderson because it would increase a data transfer rate and reliability of a disk array .

Matoba shows a common memory which stores disk management data indicating a status of each of said disk units (e.g., figs. 5B, 6-7, el. 62, el. 68). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Matoba into the system of Anderson and Johnson because it would allow obtaining status information of disk units, thereby an operator can grasp an error generation of a disk unit on the array control side in a real time manner as taught by Matoba col. 10, lines 48--67.

As per claim 7, Anderson teaches a disk array (e.g., fig 2., els. 24-26 and els. 32) comprising:

a plurality of disk units (e.g., fig. 2, els. 32; fig. 5, els. 84-92);

a first control unit (e.g., fig. 2, el. 24), to be connected to a host unit (e.g., el. 22), for controlling input and output between said host unit and said disk array (e.g., col. 7, lines 12-25);

a second control unit (e.g., fig.2, el. 26), connected to and said disk units, for controlling input and output between said first control unit and said disk units and controlling transfers between said disk units (e.g., col. 12, lines 1-14); and

communication channels connecting said disks units and said second control unit (e.g., fig. 2, els. 31 and 33; fig. 5, els. loop 94, 96),

wherein data transfer in each communication channel is controlled by said second control unit (e.g., col. 12, lines 45-46) and data transfer speed of said communication channel is higher than that of each of said units (i.e., a plurality of jobs are performed at a time; e.g., fig. 2, els. 31 and 33; fig. 5, els. 94 and 96; and col. 12, lines 45-52) and an error correcting code (ECC) group (e.g., fig.5, el. 88).

Anderson does not explicitly show the use of multiplexing and an error correcting code (ECC) group is set across a plurality of the multiplex communication channels for error correcting operation on data in the disk units connected to said plurality of the multiples communication channels; and a common memory which stores disk management data indicating a status of each of said disk units.

Johnson shows the use of multiplexing (e.g., fig. 3, els. 226-227, 260; col. 4, lines 1-10) and an error correcting code (ECC) group is set across a plurality of the multiplex communication channels for error correcting operation on data in the disk units

connected to said plurality of the multiples communication channels (e.g., fig. 3, els. 226-227, 260; col. 4, lines 1-10; col. 7, lines 40-55; col. 7 line 64 to col. 8, line 5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Johnson into the system of Anderson because it would increase a data transfer rate and reliability of a disk array .

Matoba shows a common memory which stores disk management data indicating a status of each of said disk units (e.g., figs. 5B, 6-7, el. 62, el. 68). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Matoba into the system of Anderson and Johnson because it would allow obtaining status information of disk units, thereby an operator can grasp an error generation of a disk unit on the array control side in a real time manner as taught by Matoba col. 10, lines 48--67.

As per claims 2 and 8, Anderson shows wherein said control unit transmits or receives a command to or from a certain one of said disk units and said spare disk and writes data of said certain disk unit into said spare disk (e.g., col. 12, lines 45-52 and col. 13, lines 1-11).

As per claims 5 and 11, Anderson teaches communication channels connecting said disks units and said second control unit (e.g., fig. 2, els. 31 and 33; fig. 5, els. loop 94, 96). Anderson does not explicitly show the use of a parity group is constructed by said disk units connected to other communication channels. Johnson shows a parity group is constructed by said disk units connected to other communication channels (e.g., fig. 3, els. 226-227, 260; col. 4, lines 1-10; col. 7, lines 40-55; col. 7 line 64 to col.

8, line 5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Johnson into the system of Anderson because it would increase a data transfer rate and reliability of a disk array .

As per claims 6 and 12, Anderson shows wherein said communication channel is a loop made of a fiber channel (e.g., fig. 2, els. 31, 33; fig. 3, FC loop; col. 7, lines 32-35). As stated above in the rejections to claims 1 and 7, Anderson does not explicitly show the use of time division multiplex. Johnson shows time division multiplex (e.g., col. 10, lines 20-25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Johnson into the system of Anderson because it would allow communication with a greater number of disk units.

11. Claims 15-16 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson, U.S. Patent No. 5,617,425 (hereinafter Anderson) in view of Johnson, U.S. Patent No. 6,442,179 (hereinafter Johnson), and further in view of Brown et al. (U.S. Patent No. 6148414), (hereinafter Brown).

As per claims 15 and 21, Anderson shows a plurality of communication channels (e.g., fig. 2, els. 31, 33 of the array controllers 26, 28). Anderson does not explicitly show a switch being provided to interconnect the communication channel so that communication can be made between the disks connected to the respective communications channels, and a processing is made through the switch between the disk units and the spare disk connected to another communication channel. Brown teaches a switch being provided to interconnect the communication channel so that

communication can be made between the disks connected to the respective communications channels, and a processing is made through the switch between the disk units and the spare disk connected to another communication channel (e.g., figs. 2-8, FC switch, and col. 3, lines 40-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Brown into the combined system of Anderson and Johnson because it would provide sharing management between controllers and concurrently accessing the disk units, thereby maintaining data reliability and increasing data transfer rate as taught by Brown col. 5, lines 51-52 and col. 6, lines 50-55.

As per claims 16 and 22, Anderson does not explicitly show when a first control portion of a first one of the communication channels can not operate, a first disk unit of the disk units is accessed from a second control portion through the switch. Brown teaches when a first control portion of a first one of the communication channels can not operate, a first disk unit of the disk units is accessed from a second control portion through the switch (e.g., figs. 2-8, FC switch connected to a plurality of FC ports, and col. 5, lines 56-61). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Brown into the combined system of Anderson and Johnson because it would provide sharing management between controllers and concurrently accessing the disk units, thereby maintaining data reliability and increasing data transfer rate as taught by Brown col. 5, lines 51-52 and col. 6, lines 50-55.

12. Claims 3-4 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson, U.S. Patent No. 5,617,425 (hereinafter Anderson) in view of Johnson, U.S. Patent No. 6,442,179 (hereinafter Johnson) and Matoba, U.S. Patent No. 5,611,069 (hereinafter Matoba), and further in view of Brown et al. (U.S. Patent No. 6148414), (hereinafter Brown).

As per claims 3 and 9, Anderson shows a plurality of communication channels (e.g., fig. 2, els. 31, 33 of the array controllers 26, 28). Anderson does not explicitly show a switch being provided to interconnect the communication channel so that communication can be made between the disks connected to the respective communications channels, and a processing is made through the switch between the disk units and the spare disk connected to another communication channel. Brown teaches a switch being provided to interconnect the communication channel so that communication can be made between the disks connected to the respective communications channels, and a processing is made through the switch between the disk units and the spare disk connected to another communication channel (e.g., figs. 2-8, FC switch, and col. 3, lines 40-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Brown into the combined system of Anderson, Matoba, and Johnson because it would provide sharing management between controllers and concurrently accessing the disk units, thereby maintaining data reliability and increasing data transfer rate as taught by Brown col. 5, lines 51-52 and col. 6, lines 50-55.

As per claims 4 and 10, Anderson does not explicitly show when a first control portion of a first one of the communication channels can not operate, a first disk unit of the disk units is accessed from a second control portion through the switch. Brown teaches when a first control portion of a first one of the communication channels can not operate, a first disk unit of the disk units is accessed from a second control portion through the switch (e.g., figs. 2-8, FC switch connected to a plurality of FC ports, and col. 5, lines 56-61). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Brown into the combined system of Anderson, Matoba, and Johnson because it would provide sharing management between controllers and concurrently accessing the disk units, thereby maintaining data reliability and increasing data transfer rate as taught by Brown col. 5, lines 51-52 and col. 6, lines 50-55.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Denise Tran whose telephone number is (571) 272-4189. The examiner can normally be reached on Monday, Thursday, and Friday from 9:00 a.m. to 5.30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim, can be reached on (571) 272-4182. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

D.T.

2/4/05